Chapter 13A. Special Classification Codes

Farm Bill Purpose Codes

Code	Description
FBP1	Continue to satisfy human food and fiber needs.
FBP2	Enhance the long-5term viability and competitiveness of food production and agricultural system of the United States within the global economy.
FBP3	Expand economic opportunities in rural America and enhance the quality of life for farmers, rural citizens and society as a whole.
FBP4	Improve the productivity of the American agricultural system and develop new agricultural crops and new uses for agricultural commodities.
FBP5	Develop information and systems to enhance the environment and the natural resource base upon which a sustainable agricultural economy depends.
FBP6	Enhance human health by fostering the availability and affordability of a safe, wholesome, and nutritious food supply that meets the needs and preferences of the consumer; and by assisting farmers and other rural residents in the detection and prevention of health and safety concerns.

Agrichemicals Pest Control (AC)

Evaluation and use of commercially-produced chemicals to manage, suppress, or eradicate plant and animal pests, including insects, pathogens, nematodes, and weeds. The mode of action of the chemical can be direct toxic effect(s) on the pest, interference with normal biological development, or host changes. Development of technology for application of chemicals to reduce amount(s) used, increase their effectiveness against specific target pests, limit their potential hazardous effects on human health and the environment. The AC code is subdivided according to the following matrix.

	1 **ACNP**	**2** **ACSC**	**3** **ACAT**	**4** **ACWQ**
Insects (1)	11	12	13	14
Weeds (2)	21	22	23	24
Pathogens (3)	31	32	33	34
Nematodes (4)	41	42	43	44

(1) Natural Products (ACNP): Identification, development and use of naturally-occurring products to manage plant and animal pests.

(2) Synthetic Chemicals (ACSC): Development and use of synthetic (i.e. non-naturally-occurring) chemicals and products to manage plant and animal pests.

(3) Application Technology (ACAT): Development of technology for the application of agricultural chemicals to manage plant and animal pests and that results in increased effectiveness, reduced distribution in the environment, and reduced hazard to human health and the environment.

(4) Water Quality (ACWQ): Research on the development, evaluation, formulation, and application technology of agrichemicals to control/manage plant and animal pests.

Biofuels

B1	Alcohol Fuels
B101	Alcohol-Feedstock-Crops: Development of plants with greater alcohol yields and improved production, harvesting/collection, handling and storage technologies for existing and new crops, residues and processing wastes.
B102	Alcohol-Conversion: Development of improved technologies and processes for converting sugars, starches and cellulosic material into alcohol fuels, including evaluation of engine performance and emissions.
B103	Alcohol-CoProducts: Studies on increasing the value and utilization of non-alcohol conversion residues.
B2	Biodiesel/Other
B201	Biodiesel/Other-Feedstock: Development of plants with greater oil yields and improved production, harvesting, handling and storage technologies for existing and new crops. Development of technologies and systems for collecting and handling animal fats for conversion to biodiesel.
B202	Biodiesel/Other-Conversion: Development of technologies for producing improved biodiesel and biodiesel blend fuels and evaluation of engine performance and emissions.
B203	Biodiesel/Other-CoProducts: Studies on increasing the value and utilization of non-oil conversion residues.

Biological Control

Identification, development and use of naturally occurring or modified pathogens, parasites and predators, their genes or gene products, and other biologically-based methods to reduce the effects of undesirable organisms and to favor desirable organisms, such as crops, trees, animals, and beneficial insects and microorganisms.

The BC code is subdivided according to the following matrix:

Pest	1 BCC	2 BCA	3 BCCN	4 BCM	5 BCE	6 BCGE	7 BCNP	8 BCBR	9 BCTX
Insects (1)	11	12	13	14	15	16	17	18	19
Weeds (2)	21	22	23	24	25	26	27	28	29
Pathogens (3)	31	32	33	34	35	36	37	38	39
Nematodes (4)	41	42	43	44	45	46	47	48	49

(1) Classical Biological Control (BCC): Exploration, importation, and release of parasites, and predators into new geographical areas to reduce populations of pests..

(2) Augmentation Biological Control (BCA): Actions taken to increase the populations and beneficial effects of natural enemies, including parasites, predators, weed control agents, pathogens and microbial antagonists, and the products of these organisms.

(3) Conservation Biological Control (BCCN): Premeditated actions for protecting and maintaining natural enemy populations, generally involving manipulations of environmental factors.

(4) Microbial Biological Control (BCM): Identification, development, production, and application of microbial agents to control insects, weeds plant pathogens, and plant nematodes.

(5) Ecology of Biological Control Agents (BCE): Investigations into the factors which control plant disease epidemics, insect disease epizootics, and regulation of parasite and predator populations.

(6) Genetic Enhancement of Biological Control Agents (BCGE): Increasing the effectiveness of a biological control agent by genetic manipulation.

(7) Utilization f Natural Products for Pest Control (BCNP): Discovery, development, and use of plant and microbial products for control of pests.

(8) Basic Research (BCBR): Biochemistry, genetics, behavior and physiology of pathogens and pest and beneficial insects and microorganisms.

(9) Taxonomy (BCTX): Systematics of organisms and microorganisms associated with biocontrol programs.

Biotechnology (BT)

Use of living organisms, cells, subcellular organelles, and/or parts of those structures, as well as the molecules, to effect chemical or physical changes needed to generate new products for research and commercialization. Specifically, biotechnology is the use of genetically engineered recombinant nucleic acid molecules to effect desired changes in biological materials.

NOTE: IF A BIOSAFETY LEVEL OF 1 THROUGH 4 IS SPECIFIED FOR RESEARCH PROJECT, THE BRCOM (BIOSAFETY) CODE MUST ALSO BE USED IN CONJUNCTION WITH THE BT CODE.

The BT code is subdivided into 20 subcodes, as shown in the following matrix. Relevant BT subcode(s) for a particular project should be selected from the matrix, assigned percentages, and entered in the Special Classification section of the AD-417. For example, a designation of BT12 - 30%, would indicate that 30% of a project effort involves DNA sequencing relating to research on plants. A single project may have more than one BT code, but the total cannot exceed 100%.

	1 NAPEM	**2 DS**	**3 DPR**	**4 PCT**	**5 MA**	**6 BFC**
Plants (1)	BT11	BT12	BT13	BT14	BT15	BT16
Animals (2)	BT21	BT22	BT23	BT24	BT25	BT26
Insects (3)	BT31	BT32	BT33	BT34	BT35	BT36
*Microorganisms (4)	BT41	BT42	BT43	BT44	BT45	BT46

(1) Nucleic Acid and Protein Engineering Modification (NAPEM): Gene splicing, vector fabrication, gene amplification, engineered gene deletions, recombinant nucleic activities, and other technologies with directed changes of nucleic acids and subsequent protein alterations and gene expression.

(2) DNA Sequencing (DS): Molecular gene mapping to describe the components of gene systems; i.e., promoters, enhancers, exons, introns, and other gene structures and their activities.

(3) DNA Probing and Restriction Fragment Length Polymorphism (DPR): Use of DNA segments and/or components for determination of homology of fragments between and among species of phylogenetic relations; population dynamics as associated with release experiments.

(4) Protoplast Fusion, Chromosome Transfer and Tissue Culture (PCT): Fusion of protoplasts and studies associated with the formation of whole organisms and derivatives thereof; isolation of whole or partial chromosomes and their transfer to cells or nuclei; formation of organisms in vitro or from single cell suspensions, tissues, callus, or other living cell structures.

(5) Monoclonal Antibody (MA): The technology to localize, quantify, and monitor the activities of molecules in living organisms.

(6) BFC?

*Microorganisms include bacteria, fungi, algae, virus particles, viroids, and protozoa.

BRCOM	Biosafety: To be used in conjunction with the BT code for those projects requiring identification of the biosafety level. Must have a BT code before using.
BTER	Biotechnology - Environmental Release: Research which involves Biotechnology as described above; and which includes environmental release as a part of the experimental plan. Must have a BT and BRCOM code before using.

Biotechnology Risk Assessment *(NEW)*

Code	Short Description	Long Description
BR11	Risk/Plants/Environment	GMO Plants: Environmental Risk Assessment, Risk Mitigation
BR12	Risk/Plants/Genetic	GMO Plants: Genetic Risk Assessment, Risk Mitigation
BR13	Risk/Plants/Food Safety	GMO Plants: Food/Feed Safety Risk Assessment, Risk Mitigation
BR14	Risk/Plants/Non-Food	GMO Plants: Nonfood Product Safety Risk Assessment, Risk Mitigation
BR21	Risk/Animals/Environment	GMO Animals: Environmental Risk Assessment, Risk Mitigation

BR22	Risk/Animals/Genetic	GMO Animals: Genetic Risk Assessment, Risk Mitigation
BR23	Risk/Animals/Food Safety	GMO Animals: Food/Feed Safety Risk Assessment, Risk Mitigation
BR24	Risk/Animals/Non-Food	GMO Animals: Nonfood Product Safety Risk Assessment, Risk Mitigation
BR31	Risk/Insects/Environment	GMO Insects: Environmental Risk Assessment, Risk Mitigation
BR32	Risk/Insects/Genetic	GMO Insects: Genetic Risk Assessment, Risk Mitigation
BR33	Risk/Insects/Food Safety	GMO Insects: Food/Feed Safety Risk Assessment, Risk Mitigation
BR34	Risk/Insects/Non-Food	GMO Insects: Nonfood Product Safety Risk Assessment, Risk Mitigation
BR41	Risk/Microbes/Environment	GMO Microbes: Environmental and Ecological Risks and Risk Mitigation
BR42	Risk/Microbes/Genetic	GMO Microbes: Genetic Risk Assessment, Risk Mitigation
BR43	Risk/Microbes/Food Safety	GMO Microbes: Food/Feed Safety Risk Assessment, Risk Mitigation
BR44	Risk/Microbes/Non-Food	GMO Microbes: Nonfood Product Safety Risk Assessment, Risk Mitigation

		Environmental	**Genetic**	**Food/Feed Safety**	**Non-Food Product Safety**
Class of Organism	**Code**	**1**	**2**	**3**	**4**
Plants	1	BR11	BR12	BR13	BR14
Animals	2	BR21	BR22	BR23	BR24
Insects	3	BR31	BR32	BR33	BR34
Micro-organisms	4	BR41	BR42	BR43	BR44

Types of Research that might be categorized as Environmental Risk Assessment and Risk Mitigation, BR_1:

- Direct and indirect effects on non0target organisms and populations
- Evolution of resistant pest or pathogen populations
- Refuge design, modeling, and evaluation
- Optimization of pest protectant dose and distribution (spatial or temporal) within the hose
- Behavior of complex systems (e.g., multiple target pests, multiple host species for the pest (s), multiple pest protectant agents with different modes of action)
- Off-site impacts of GMO-specific farming practices, such as altered pesticide use patterns
- Altered soil processes, such as organic matter decomposition
- Other

Types of research that might be categorized as Genetic Risk Assessment and Risk Mitigation, BR_2:

- Unwanted gene or trait transfer (including selectable marker traits) through outcrossing, horizontal gene transfer, or other mechanisms
- Pleitropy and negative gene interactions
- Development of stacked pest protectant genes with multiple modes of action
- Post-transformation breeding strategies
- Removal of unwanted DNA (selectable markers or other)
- Development of selectable markers not based on antibiotic or herbicide resistance
- Development of tissue- or development stage-specific gene promoters to modify spatial or temporal distribution of pest protectant agents within the hose
- Targeting specific genomic sites (including maternally inherited sites) for gene insertion
- Genetic control of reproductive potential (reproductive development, seed germination)
- Genetic stability of transformants
- Other

Types of research that might be categorized as Food/Feed Safety Risk Assessment and Risk Mitigation, BR_3:

- Allergens
- Toxins and anti-nutritive substances
- Altered populations of human pathogenic microbes
- Other

Types of research that might be categorized as Non-Food Product Safety Risk Assessment and Risk Mitigation, BR_4:

- Pathogenicity (e.g., recombinant live vaccines)
- Allergenicity (e.g., latex rubber)
- Toxicity
- Other

Agricultural Energy Research and Development Codes

Conservation and Use of Energy

Crops	
E1A1	Production
E1A2	Processing
E1A3	Marketing
E1A4	Consumption
Livestock	
E1B1	Production
E1B2	Processing
E1B3	Marketing
E1B4	Consumption
Forestry	
E1C1	Production
E1C2	Processing
E1C3	Marketing
E1C4	Consumption
Sectoral and Multi-Commodity	
E1D1	Production
E1D2	Processing
E1D3	Marketing
E1D4	Consumption

Community	
E1E1	Housing, Equipment, and Furnishings
E1E2	Rural Transportation
E1E3	Rural Development

Substitute by Renewable or Non-Critical Energy Sources and Forms

Development of Energy and Petrochemical Substitutes from Biomass	
E2A1	Agricultural Products and Residues
E2A2	Forestry Products and Residues
E2A3	Energy Farming Crops, Forests, and Microorganisms
Development of Technology (including equipment) for Use of Alternative Sources and Forms of Energy	
E2B1	Solar
E2B2	Geothermal
E2B3	coal, Lignite, Oil Shale, Peat, etc.
E2B4	Electricity
E2B5	Waste Heat from Power Plants, etc.
E2B6	Wind
Consequences of Energy Production, Availability, and Use	
E3A1	Agriculture and Forestry
E3B1	Other Socio-Economic
E3C1	Natural Resources
E3D1	Reclamation and environment Effects

Entomology Research (ENT)

Research that emphasizes one or more approaches to expand existing knowledge in the

fundamental and applied areas of the science of entomology as it relates to agricultural production and commodity protection, including protection of humans from nuisance and health-threatening arthropods, with emphasis on beneficial and pest insects, mites, and ticks. * The ENT code is subdivided into 20 subcodes, as shown in the following matrix. Relevant ENT subcode(s) for a particular project should be selected from the matrix, assigned the percentage to which the project is devoted, and entered in the Special Classification section of the AD-417.

	(01) BISY	**(02) GGP**	**(03) TC**	**(04) BCPH**	**(05) BRNE**	**(06) BEH**	**(07) EC**
Insects (1)	ENT101	ENT102	ENT103	ENT104	ENT105	ENT106	ENT107
Mites (2)	ENT201	ENT202	ENT203	ENT204	ENT205	ENT206	ENT207
Ticks (3)	ENT301	ENT302	ENT303	ENT304	ENT305	ENT306	ENT307

	(08) VDT	**(09) RNMP**	**(10) TAR**	**(11) HP/AR**	**(12) NPPC**	**(13) BC**	**(14) BBC**
Insects (1)	ENT108	ENT109	ENT110	ENT111	ENT112	ENT113	ENT114
Mites (2)	ENT208	ENT209	ENT210	ENT211	ENT212	ENT213	ENT214
Ticks (3)	ENT308	ENT309	ENT310	ENT311	ENT312	ENT313	ENT314

	(15) (A/SIT)	**(16) CC**	**(17) PMC**	**(18) IPM/E**	**(19) MS**	**(20) ECN**
Insects (1)	ENT115	ENT116	ENT117	ENT118	ENT119	ENT120
Mites (2)	ENT215	ENT216	ENT217	ENT218	ENT219	ENT220
Ticks (3)	ENT315	ENT316	ENT317	ENT318	ENT319	ENT320

*Although entomology is defined as that branch of biological science dealing with insects, mites, and ticks, including the use of molecular genetic techniques.

(01) Biosystematics (BISY): Research to develop knowledge of taxonomy and systematics of insects, mites, and ticks, including the use of molecular genetic techniques.

(02) Genetics and Germplasm Preservation (GGP): Fundamental research to develop advanced techniques, except host-plant/animal resistance, for managing insect, mite, and tick pests or improving beneficials, including entomopathogens, through increasing the knowledge of their genetics and through fundamental research on genetic engineering and other genetic methods for manipulation of genes, by population genetic studies, and by acquisition characterization, preservation, selection, recombination, and mapping of genetic material, and through studies of the structural organization of the nuclear and organic genomes.

(03) Tissue Culture (TC): Research to develop technologies for the in vitro culture of insect, mite and tick cells and tissues, including the production of fastidious entomopathogens in tissue culture.

(04) Biochemistry and Physiology (BCPH): Fundamental research to develop knowledge about molecular and cellular processes, including biochemical pathways in insects, mites and ticks; this area includes fundamental research on structure, function and metabolism of proteins, lipids, and carbohydrates, the exoskeleton, differentiation, and morphogenesis, and general physiological processes at the organ and tissue levels.

(05) Bioregulation and Neurobiology (BRNE): Fundamental research to develop knowledge of the role of neurohormones and other hormones, and bioregulation of the life processes in insects, ticks and mites; this area includes research on secretion and metabolism of hormones and their action on membranes, and general neurobiology, including regulatory neurochemicals, functional morphology, and instrinsic and extrinsic regulation.

(06) Behavior (BEH): Fundamental research to develop knowledge of reproduction and other behaviors, including host-related behaviors, neural programming, integration, and coordination of behaviors, chemical and biological mechanisms of plant/animal/pest interactions, both intraspecific and interspecific interactions; this area includes related fundamental research such as isolation, characterization, and synthesis of semiochemicals (pheromones and allelochemicals), and also includes fundamental research on arrestants and locomotor, feeding, mating, and oviposition stimulants.

(07) Ecology (EC): Investigations into factors which regulate insect, mite and tick populations, factors involved in sudden and destructive insect population buildups, factors that predispose populations to expand and migrate, meteorogical factors involved in insect dispersal and deposition, and research on the effects of cropping and tillage systems and how these effects affect population status.

(08) Vector/Disease Organism Transmission (VDT): Fundamental research to identify vectors of plant and animal pathogens and mechanisms of transmission, research to characterize factors involved in transmission, research to identify and analyze for the presence of pest-borne disease organisms, and research to increase knowledge of the biology and ecology of vectors and fundamental principles for control of vectors.

(09) Rearing, Nutrition and Mass Propagation (RNMP): Research to increase knowledge about nutrition and suitable requirements for rearing and mass propagation of insects, mites, and ticks, including beneficials, and for the development of improved technologies.

(10) Mode of Action, Resistance, Toxicology and Fate of Insecticides, Acaracides, Fumigants, and Repellents (IAR): Fundamental research to increase the knowledge about the nature of resistance and how to retard its development, and about the modes of action and metabolism at the cellular and subcellular level. Research to develop suitable bioassays

and analytical methods, new chemical functions, including repellents and fumigants, research on minor-use pesticides, and research on degradation and fate of these pesticides in the environment.

(11) Host-Plant/Animal Resistance (HP/AR): Breeding, selection, and/or genetic engineering of plants and animals for resistance to insects, mites, and ticks.

(12) Natural Products/Phytochemicals Research (NPPC): Fundamental research to discover and characterize plant and microbial products for control of insects, mites, and ticks.

(13) Traditional Biocontrol (BC): Applied research on the use of predators, parasites, parasitoids, pathogens, and competitors to reduce the harmful effects of insects, mites, and ticks.

(14) Biologically-Based Control Methodology (BBC): Applied research on the use and application of biological-based methods (hormones, antimetabolites, feeding deterrents, pheromones and allelochemicals [semiochemicals] and other naturally-produced chemicals, host-resistance, autocidal methods, etc.), other than traditional biocontrol agents, to reduce or eliminate the harmful effects of insects, mites, and ticks. This area includes the development of dispensors, traps, monitoring devices, etc., and studies on detection and survey methodology.

(15) Autocidal/Sterile Technology Research (A/SIT): Applied research that employs insects, mites or ticks to destroy its own kind, or to bring about the self-destruction of the species.

(16) Chemical Control Methodology (CC): Applied research that utilizes or aids in the development of synthetic organic or inorganic chemicals (non-naturally occurring) for controlling insects, mites, and ticks, including improved fumigation and pesticide application technology.

(17) Physical and Mechanical Control Methodology (PMC): Applied research that employs physical and mechanical methodology and/or purposeful manipulation of the environment to make it less favorable, thereby exerting economic control or reducing rates of insect, mite, or tick increase and damage, e.g., modifications of the planting, growing, cultivating and tilling, or harvesting of crops, sanitation, animal/crop rotation, land, livestock, and tree management, trap crops, pruning and defoliating, water management, heat, cold radiation, acoustical detection, etc.

(18) IPM, Area-Wide Suppression or Eradication (IPM/E): Integrated and other suitable related applied research control measures or strategies for management to maintain pest populations below damaging levels, and/or suppression or eradication of insects, mites, and ticks, based on environmental/cultural manipulations, resistance varieties or breeds, use of natural enemies and biologically-based methods, pest-free zones, judicious use of chemical pesticides, genetic control, regulatory practices, and other means that are environmentally sound, and economically and socially acceptable; this requires actions tailored to specific

quantitative data on insect damage (see MS & ECN).

(19) Models and Systems (MS): Research to develop and evaluate models, including predictive types, for pest - plant/animal - environmental integration, including vector-disease interaction, and control agent (s) interaction in order to facilitate the development of a systems approach to maximizing plant/animal production and protection and environmental compatibility (related to IPM/E).

(20) Economics (ECN): Research to evaluate the economic advantages, disadvantages, and implementation feasibility of emerging IPM established practices (related to IPM/E).

Integrated Pest Management (IPM)

IPM1	**IPM Systems Research, Level:** Consists of research to integrate two or more control techniques to manage one or more species of the same single grouping of pests, such as weeds (e.g., pigweed, crabgrass ragweed), insects, nematodes, or diseases. Such programs are referred to as integrated weed management systems, integrated insect management systems, integrated nematode management systems, and integrated disease management systems.
IPM2	**IPM Systems Research, Level II:** Consists of research to integrate two or more management systems for two or more pest groups, such as diseases and insects; or diseases, weeds, insects and nematodes.
IPMB	**Basic Research:** Generates the knowledge required to understand pests and to develop national control strategies for individual pests and pest complexes. Examples are research on life cycles, population dynamics, biochemical nature of resistance, mode of action of pesticides, epidemiology, and ecology.
IPMC	**Control Component Research**: Develops specific control techniques and related technologies, such as pest-resistant crop cultivars and livestock breeds; and biological-, chemical-, cultural-, and mechanical-control methods.
IPME	**Economic Research:** Evaluates the economic advantages, disadvantages, and implementation feasibility of emerging IPM methods, systems, and strategies related to established practices.

Pest* Control (PC) Codes**

Code	Pest Control Activity/Description

PC1	**Fundamental Research on Pests:** Studies that generate the knowledge required to understand pests and te potential impact of pest control strategies, and that will lead to the development and use of control strategies for individual pests and pest complexes.
PC2	**Traditional Biological Control:** Basic and applied research on the discovery, development and use of parasites, parasitoids, predators, pathogens, competitors, and other beneficial organisms to reduce the harmful effects of pests. This includes the exploration, importation, and release of biocontrol agents, augmentation and conservation biological control tactics, and mass propagation.
PC3	**Miscellaneous Biologically-Based (Biorational) Control*****: Basic and applied research on the discovery, development, use and application of biological-based methods (e.g., hormones, antimetabolites, feeding deterrents, repellents, pheromone and allelochemicals [semiochemicals] and other naturally-produced chemicals, attracticides, the use of traps and similar devices autocidal methods/ sterile technology, etc.), to reduce or eliminate the harmful effects of pests.
PC4	**Host Resistance:** Basic and applied research on the discovery, development, use and application of pest-resistant crop cultivars and animal breeds, including genetically-engineered plants and animals resistant to pests. This tactic is placed by some experts under cultural control, but will be kept separate for this scheme.
PC5	**Cultural Control:** Basic and applied research on the discovery, development, use and application of tactics such as crop rotation, intercropping, tillage approaches, cover crops or mulches, managing irrigation and drainage, fertilization, removal of crop residues, and other field sanitation procedures, altering planting and harvesting schedules, habitat management, and similar strategies for pest control purposes.
PC6	Chemical Control: Basic and applied research that utilizes or aids in the discovery and development of synthetic organic (non-naturally occurring) or analogs of natural chemicals (e.g., pyrethroids, insect growth regulators, etc.), or inorganic chemicals for controlling animal and plant pests, including fumigation (e.g., methyl bromide), development and use of improved chemical pesticide application technology. This includes the IR-4 Minor-Use program.
PC7	Physical and Mechanical Control: Basic and applied research on the discovery, development and use of physical and mechanical methodology, thereby exerting economic control or reducing rates of pest contamination and damage, e.g., heat/cold treatment, electromagnetic energy (radio, infrared, visible and ultraviolet, and ionizing radiation), acoustical detection, vacuum collection, screening, trapping and other exclusion tactics, etc.

PC8	Models and Expert Systems: Basic and applied research on models, including predictive types, and decision support systems for pest-plant/animal - environmental integration, including vector-disease interaction, and control agent(s) interaction in order to facilitate the development of a systems approach to maximizing plant/animal protection and environmental compatibility.
PC9	Integrated Pest Management (IPM): Consists of research to integrate two or more control techniques to manage one or more species of the same single grouping of pests, such as weeds (e.g., pigweed, crabgrass, ragweed), insects, nematodes, or diseases. Such programs are referred to as integrated weed-management systems, integrated insect-management systems, integrated nematode-management systems, and integrated disease-management systems, or consists of research to integrate two or more management systems for two or more pests groupings, such as diseases and insects; or diseases, weeds, insects, and nematodes. The aim is to maintain pest populations below damaging levels, and/or suppress or eradicate pests, based on environmental/cultural manipulations, resistant varieties or breeds, use of natural enemies and biologically-based methods, pest-free zones, judicious use of chemical pesticides, genetic control, detection and monitoring, regulatory practices, and other means that are environmentally sound, and economically and socially acceptable; this requires actions tailored to specific pests, crops, locations, and market conditions based on quantitative data on pest damage. Strategies may be carried out on an areawide concept basis. They also may be designed to fit organic farming criteria.
PC10	Economics of Pest Control: Research to evaluate the economic advantages, disadvantages, and implementation feasibility of emerging IPM and other pest control methods, systems, and strategies related to established practices.
	*Pests includes insects, mites, ticks, and related arthropods, animal and plant diseases-causing organism (microbes, parasites and nematodes), and weeds. **Replaces former PST and IPM codes; Pest Control (PC) codes must not total more than 100% on any one CRIS proejct. Related matrix codes such as Pest Management (PM), Agrichemicals Pest Control (AC), Biological Control (BC), Entomology Research (Ent), Biotechnology (BT), etc., are still to be used as special classification coding and for tracking work on individual categories of pests and approaches. ***Traditional biological control, host resistance, cultural control, and some categories of pesticidal chemicals are excluded under this activity, since they are included elsewhere in the scheme (see PC2, PC4, PC5, and PC6).

Pest Management (PM)

Development of strategies for control of plant and animal pest species (including insects, pathogens, nematodes, and weeds). These strategies include integration of cultural practices, biological or biologically-based control, genetic manipulation techniques, and use of chemicals as needed. These strategies are based on the interrelationships among the pests, the environment, and pest hosts. The PM code is subdivided according to the following matrix:

Pest	1 PMCC	2 PMCP	3 PMBC	4 PMGM	5 PMBR	6 PMWQ
Insects (1)	11	12	13	14	15	16
Weeds (2)	21	22	23	24	25	26
Pathogens (3)	31	32	33	34	35	36
Nematodes (4)	41	42	43	44	45	46

(1) Chemical Control (PMCC): Use of naturally-occurring synthetic chemicals to control and manage plant and animal pests.

(2) Cultural Practices (PMCP): Development of cultural and management practices to reduce losses due to plant and animal pests.

(3) Biological control (PMBC): Identification, development and use of naturally-occurring or modified pathogens, parasites and predators, their genes or gene products, and other biologically-based methods to reduce the effect of undesirable organisms and to favor desirable organisms such as crops, trees, animals, and beneficial insects and microorganisms.

(4) Genetic Modification (PMGM): Manipulation of the genetic composition of pests and/or their hosts to reduce losses due to plant and animal pests.

(5) Basic Research (PMBR): Development of fundamental knowledge of the biology, molecular biology, genetics, molecular genetics, behavior, biochemistry, and physiology of plant and animal pests.

(6) Water Quality (PMWQ): Research on pesticide management practices, technology, and formulation.

Pesticide Codes

PST1	**Target I, Fundamental Biology** - Studies of the taxonomy, biology, ecology, physiology, pathology, metabolism, and nutrition of pests and host plants and animals.
PST2	**Target II, Improve Means of Nonpesticidal Control** - Control of pests by nonpesticidal means is the ultimate goal - through pest-resistance; attractants and repellents; predators, parasites, and pathogens of pests; and physical control practices.
PST3	**Target III, Improve Pesticide Use Patterns** - Development of (a) safer, more effective ways to use pesticides by timing, formulations, and modes of application; (b) improved detection and measurement of pesticides and metabolites; and (c) ways to eliminate or minimize residues.
PST4	**Target IV, Toxicology, Pathology, Metabolism, and Fate of Pesticides** - Applied or fed to laboratory and farm animals, or applied to plants. Determination of residues in organisms, modes of metabolic breakdown and metabolic products.
PST5	**Target V, Economics of Pest Control** - Use, supply, demands and requirements for pesticides.

Range and Pasture Research Codes

Conservation, Development, and Use of Soil, Water, and Other Natural Resources	
G101	Site Classification
G102	Condition and Trend
G103	Sampling and Monitoring
G104	Climate and Weather
G105	Water for Farmsteads and Livestock
G106	Control and manage Water Runoff Quality and Quantity
G107	Reduce Soil Erosion
G108	Conserve and Use Fish and Wildlife Resources
G109	Conserve and Manage Fish and Wildlife Habitat
G110	Reclaim and Use Disturbed Land
G111	Conserve and Use Land
Protection of Man, Commodities, Resources and Their Products from Losses, Damage, or Discomfort	

G201	Methods and Equipment for Chemical Control of Weeds and Brush
G202	Methods and Equipment for Nonchemical Control of Weeds and Brush
G203	Evaluate Pesticides and Their Residues
G204	Manage or Control Wildlife Damage
Production and Quality Improvement	
G301	Germplasm Collection and Evaluation
G302	Taxonomy and Geographical Distribution
G303	Morphology, Anatomy, Histology, and Cytology
G304	Production, Growth, and Development, including Seed Production and Quality
G305	Ecology and Population Dynamics
G306	Animal Behavior
G307	Chemical Composition and Quality
G308	Photosynthesis
G309	Nitrogen Fixation
G310	Other Metabolic Processes
G311	Water Use Efficiency
G312	Assess and Predict Nutrient Needs of Plant
G313	Improve Breeds and Varieties
G314	Genetics and Germplasm Enhancement
G315	Grazing Methods and Techniques
G316	Seeding and Planting Technologies
G317	Technology for Use of Fire
G318	Equipment and Techniques for Range and Pasture
G319	Structures and Facilities for Handling Animals
General Methodology, Technology, and Evaluation	
G401	Effect of Policy on Land Use
G402	Socio-Economic Effects of Land Use

Water Quality

WQBIC	Research on integrated pest management strategies, host plant resistance, and biological methods for controlling plant and animal pests that is directed toward maintaining or improving the quality of groundwater and surface water through the reduction or replacement of pest control chemicals that are known contaminants of these resources.
WQGWN	Research on plant nutrient management, fertilizer application methods, crop rotations, water management, nutrient leaching models, and associated physical, chemical, and biological processes that is directed toward understanding, predicting, and controlling the movement of plant nutrients into groundwater.
WQGWP	Research on pesticide management practices, pesticide application technology, formulation, cropping practices, pesticide leaching models, and associated physical, chemical, and biological processes that is directed toward understanding, predicting and controlling the movement of pesticides to groundwater.
WQGWX	Research on resource management practices an on the chemistry of salts and toxic chemicals in fresh water environments and in saturated and unsaturated soils that is directed toward understanding, predicting, and controlling contamination of groundwater by salts and toxic elements.
WQSWN	Research on nutrient management practices, fertilizer application methods, crop rotations, water management, nutrient runoff models, and associated physical, chemical, and biological processes that is directed toward understanding, predicting, and controlling the movement of plant nutrients into surface water bodies such as streams, lakes, reservoirs, and estuaries.
WQSWP	Research on pesticide management practices, pesticide application technology, formulation, cropping practices, and pesticide runoff models, and associated physical, chemical and biological processes that is directed toward understanding, predicting, and controlling pesticide concentrations in surface water bodies, including streams, lakes, and estuaries.
WQSWS	Research on resource management practices, and on erosion and sedimentation processes that is directed toward improving our ability to understand, predict, and control the movement of sediments into and within surface water bodies such as streams, lakes, reservoirs, and estuaries.
WQSWX	Research on resource management practices and on the chemistry of salts and toxic elements in fresh water environments and in saturated and unsaturated soils that is directed toward understanding, predicting, and controlling the contamination of surface water bodies such as streams, lakes and reservoirs.

Water Resources Codes

W1A	Properties of Water
W1B	Solution and Suspension
Water Cycle	
W2A	Water Cycle
W2B	Precipitation
W2C	Snow, Ice, Frost
W2D	Evaporation, Transpiration
W2E	Stream Flow
W2F	Groundwater
W2G	Water in Soils
W2H	Lakes
W2I	Water and Plants
W2J	Erosion and Sedimentation
W2K	Chemical Processes
W2L	Estuarine Problems
Water Supply Augmentation-Conservation	
W3A	Saline Water Conversion
W3B	Water Yield Improvement
W3C	Use of Water with Impaired Quality
W3D	Conservation - Domestic Use
W3E	Conservation - Industry Use
W3F	Conservation - Agricultural
Water Quality Management Control	
W4A	Control Water on Land
W4B	Groundwater Management

W4C	Man’s Activity on Water
W4D	Watershed Protection
Water Quality Management Protection	
W5A	Pollutant Identification
W5B	Pollutant Source and Fate
W5C	Pollutant Effects
W5D	Waste Treatment Process
W5E	Disposal of Waste
W5F	Water Treatment
W5G	Water Qaulity Control
Water Resources Planning	
W6A	Techniques of Planning
W6B	Evaluation Process
W6C	Costs, Pricing, Repaying
W6D	Water Demand
W6E	Water Law/Institutions
W6F	Nonstructural Alternatives
W6G	Ecologic Impact on Water Development
Resources Data	
W7A	Network Design
W7B	Data Acquisition
W7C	Evaluation, Processing, Publication
Engineering Works	
W8A	Engineering design
W8B	Materials
W8C	Construction Operation
Manpower, Grants, Facilities	
W9A	Educational - Extramural

W9B	Educational - Inhouse
W9C	Facilities
W9D	Grants and Contract Allotments

Miscellaneous Special Codes

BARD	To be used on all projects funded by the Binational Agricultural Research and Development Fund.
BSF	Small Farm Research: That portion of a research activity which may ultimately have specific application to agricultural production on small farms.
CRG	To be used on all projects funded by the National Research Initiative Competitive Grants Program - CSREES.
CRADA	Cooperative Research and Development Agreement
PAT	Pesticide Application Technology
X1890	Cooperative Research with the 1890 Land Grant Institutions
XACU	Animal Care and Use: Must be used if a vertebrate animal is used in conducting the research
XCO^2	**Carbon Dioxide:** Refers to research on the carbon cycle, carbon dioxide and climate, and vegetation response to carbon dioxide. If CO^2 is a different or independent variable in studies related to one of these three areas, it should be coded
XFI	**Food Irradiation:** Use of irradiation for the purpose of preservation and/or microbial control of foods (e.g., meat, poultry, grains, fruits, and vegetables); can include irradiation of packaging materials and/or machinery when such use is indicated to achieve control in foods.
XHMR	**Human Health and Safety:** Research applicable to human health, including food safety and health; and, environmental pollution and water quality research having human health applications. Excludes animal health research unless initiated primarily to protect human health.
XWR	**Weather-Related:** Having a relationship to interaction of plants, animals, man, or other organisms with macro- or microclimatological or meteorological factors; amelioration of hazards of, or damage by, lightning and other meteorological factors; weather modifications and related subjects.

Biosafety Levels (BSL)*

Biosafety Level - A combination of work practices and physical containment requirements designed to reduce the risk of laboratory infection when working with infectious material. The degree of protection recommended is proportional to the risk associated with an agent. There are four biosafety levels with an agriculture modification to one of them them, BSL-3-Agriculture.

BSL-1	Biosafety Level 1 is suitable for work involving well-characterized agents not known to consistently cause disease in healthy adult humans, and of minimal potential hazard to laboratory personnel and the environment. Work is generally conducted on open bench tops using standard microbiological practices. Special containment equipment or facility design is neither required nor generally used. The level of a high school biology laboratory.
BSL-2	Biosafety Level 2 is similar to BSL-1 and is suitable for work involving agents of moderate potential hazard to personnel and the environment. These moderate risk organisms are found in the community, cause mild illness, and are treatable or preventable. Access is restricted and minimal protective clothing and equipment are employed. Work surfaces and waste items are decontaminated after use. Most research and diagnostic labors are at this level.
BSL-3	Biosafety Level 3 practices, safety equipment, and facility design and construction are applicable to clinical, diagnostic, research or production facilities in which work is done with indigenous or exotic agents with a potential for aerosol transmission, and which may cause serious and potentially lethal infections. Precautions include inward directional airflow, separation from non-laboratory areas, and special laboratory protective clothing.
BSL-3-Ag	Biosafety Level-3-Agriculture. Because agriculture has a special concern for reducing the risk of environmental exposure, this BSL enhances containment described for BSL-3 by adding filtration of supply and exhaust air, sewage decontamination, exit personnel showers, and facility integrity testing.
BSL-4	Designed for work with dangerous and exotic agents that pose high individual risk of life threatening disease, which may be transmitted via the aerosol route and for which there is no available vaccine or treatment. While there is no BSL-4 requirement for agricultural agents, recently two viruses have been discovered that are highly lethal for agricultural species and for humans (Nipah and Hendra viruses); and these can only be manipulated at laboratories having BSL-4 capability.

Biosafety Levels, Risk Assessment, and Agent Summary Statements. *Biosafety in Microbiological and Biomedical Laboratories (BMBL),* 4th Edition. Published by the Office of Biological Safety, Centers for Disease Control and Prevention. Stock number 017-040-00547-4, available from: U.S. Superintendent of Documents, U.S. Government.

*** The above Biosafety codes are for informational purposes and are to be included in the approach section of the 416, along with the Biosafety Certification date. These codes do not go on the 417.**

Foreign Country Codes

Country	Code	Country	Code	Country	Code
Antigua	8045	Great Britain	8047	Philippines	8015
Argentina	8041	Greece	8021	Poland	8003
Armenia	8069	Guadeloupe	8037	Romania	8039
Australia	8025	Guinea	8011	Russia	8056
Austria	8026	Haiti	8038	Sierra Leone	8044
Azerbayan	8051	Hungary	8050	Slovak Republic	8065
Barbados	8046	India	8001	Slovenia	8070
Belarus	8052	Israel	8009	Spain	8016
Belgium	8027	Italy	8029	Sri Lanka (Ceylon)	8008
Belize	8043	Japan	8013	Sudan	8040
Bosnia	8061	Kazakhstan	8053	Sweden	8017
Brazil	8031	Korea	8014	Switzerland	8018
Burma	8012	Kyrgystan	8054	Taiwan	8019
Chile	8032	Latvia	8068	Tajlkistan	8057
Columbia	8033	Lithuania	8067	Tunisia	8007
Costa Rica	8042	Macedonia	8062	Turkey	8020
Croatia	8063	Mexico	8035	Turkmenistan	8058
Czech Republic	8064	Moldovia	8055	Ukraine	8059
Egypt (A.R.E.)	8005	Morocco	8006	United Kingdom	8010
Estomia	8069	Netherlands	8028	Uruguay	8034
France	8023	New Zealand	8036	Uzbekistan	8060
Finland	8024	Nigeria	8048	Venezuela	8049
Georgia	8066	Pakistan	8002	Yugoslavia	8004
Germany	8022	Peru	8030		